

This listing of claims will replace all prior versions, and listings, of claims in the Application.

**Listing of Claims:**

**Claim 1 (Currently Amended):** A method for facilitating enhanced readability of a fixed digital document having multiple pages, the method comprising:

obtaining the fixed digital document at a computing system implementing an intelligent virtual paging system, wherein the fixed digital document cannot be modified using a character based application;

paginating, at the computing system, the multiple pages of the fixed digital document into multiple virtual pages through a virtual paging zoom and pan paradigm;

identifying and locating lines of text within the multiple pages of the fixed digital document at the computing system;

determining, at the computing system, whether a virtual-page boundary is coextensive with an identified line of text;

responsive to such determining, adjusting the virtual-page boundary at the computing system if the boundary is coextensive with the identified line of text so that the boundary is not coextensive with the identified line.

**Claim 2 (Currently Amended):** A method as recited in claim 1 further comprising displaying a virtual page of the multiple virtual pages at

a display device associated with the computing system and doing so without displaying overlap.

**Claim 3 (Currently Amended):** A method as recited in claim 1 further comprising displaying virtual pages of the multiple virtual pages at a display device associated with the computing system, wherein unpeated content of multiple virtual pages starts at a common spatial position on the multiple virtual pages.

**Claim 4 (Currently Amended):** A method as recited in claim 1 further comprising displaying virtual pages of the multiple virtual pages at a display device associated with the computing system, wherein a top synthetic virtual-page margin is displayed so that the content of the virtual page starts at a common spatial position.

**Claim 5 (Original):** A method as recited in claim 1, wherein the identifying and locating comprises performing at least minimal OCR on content of the document to locate line boundaries.

**Claim 6 (Original):** A method as recited in claim 1, wherein the paginating comprises determining a minimum integer number of virtual pages per page of the digital document while maintaining legibility, aspect ratio, and good margins.

**Claim 7 (Previously Presented):** A computer comprising one or more computer-readable storage media having computer-executable instructions that, when executed by the computer, perform the method as recited in claim 1.

**Claim 8 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 1.

**Claim 9 (Currently Amended):** A method for facilitating enhanced readability of a digital document, the method comprising:

    paginating multiple pages of the digital document into multiple virtual pages at a computing system implementing an intelligent virtual paging system, wherein the digital document is a fixed digital document which cannot be modified using a character based application;

    determining, at the computing system, whether a virtual-page boundary is coextensive with a line of text of a virtual page of the digital document;

    placing a virtual-page boundary of the virtual page at the computing system so that such boundary is not coextensive with the line of text when the virtual-page boundary is coextensive with the line of text of the virtual page; and

    determining, at the computing system, an overlap area for the virtual page when the virtual-page boundary is not coextensive with the line of text of the virtual page.

**Claim 10 (Canceled)**

**Claim 11 (Currently Amended):** A method as recited in claim 9 further comprising identifying and locating lines of text within the multiple pages of the digital document at the computing system.

**Claim 12 (Canceled)**

**Claim 13 (Canceled)**

**Claim 14 (Currently Amended):** A method as recited in claim 9 further comprising displaying the virtual page of the multiple virtual pages at a display device associated with the computing system and doing so without displaying overlap.

**Claim 15 (Currently Amended):** A method as recited in claim 9 further comprising displaying virtual pages of the multiple virtual pages at a display device associated with the computing system, wherein unrepeatd content of the multiple virtual pages starts at a common spatial position on the multiple virtual pages.

**Claim 16 (Original):** A method as recited in claim 9, wherein the paginating comprises determining a minimum integer number of virtual

pages per page of the digital document while maintaining legibility, aspect ratio, and good margins.

**Claim 17 (Previously Presented):** A computer comprising one or more computer-readable storage media having computer-executable instructions that, when executed by the computer, perform the method as recited in claim 9.

**Claim 18 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 9.

**Claim 19 (Currently Amended):** A method for facilitating enhanced readability of a digital document, the method comprising:

    paginating multiple pages of the digital document into multiple virtual pages at a computing system implementing an intelligent virtual paging system, wherein the digital document is a fixed digital document which cannot be modified using a character based application;

    determining, at the computing system, whether a virtual-page boundary is coextensive with a line of text of a virtual page of the digital document;

    adjusting, at the computing system, the virtual-page boundary into white space before the line of text when the virtual-page boundary is coextensive with the line of text; and

    displaying the virtual pages of the multiple virtual pages at a display device associated with the computing system and doing so without displaying overlap.

**Claim 20 (Canceled)**

**Claim 21 (Original):** A method as recited in claim 19, wherein the paginating comprises separating the one or more pages of the digital

document into multiple virtual pages without splitting lines of text of the document.

**Claim 22 (Original):** A method as recited in claim 19, wherein the paginating comprises:

identifying lines of text within the digital document;

separating the one or more pages of the digital document into multiple virtual pages between lines of text.

**Claim 23 (Previously Presented):** A computer comprising one or more computer-readable storage media having computer-executable instructions that, when executed by the computer, perform the method as recited in claim 19.

**Claim 24 (Original):** A method as recited in claim 19, wherein the paginating comprises determining a minimum integer number of virtual pages per page of the digital document while maintaining legibility, aspect ratio, and good margins.



**Claim 25 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 19.

**Claim 26 (Currently Amended):** A method for enhancing the readability of a fixed digital document, the method comprising:

    paginating multiple pages of the fixed digital document at a computing system implementing an intelligent virtual paging system, wherein the fixed digital document ~~which~~ cannot be modified using a character based application, into multiple virtual pages;

    determining, at the computing system, whether a virtual-page boundary is coextensive with a line of text of a virtual page of the fixed digital document;

    displaying the virtual pages of the multiple virtual pages at a display device associated with the computing system, wherein unrepeatd content of the multiple virtual pages starts at a common spatial position on the multiple virtual pages and repeated content of the multiple virtual pages is placed above the common spatial position;

    lowlighting repeated content on a particular virtual page at the computing system, the repeated content is content repeated from another virtual page.

**Claim 27 (Canceled)**

**Claim 28 (Original):** A method as recited in claim 26, wherein the paginating comprises separating the one or more pages of the digital document into multiple virtual pages without splitting lines of text of the document.

**Claim 29 (Original):** A method as recited in claim 26, wherein the paginating comprises:

identifying lines of text within the digital document;

separating the one or more pages of the digital document into multiple virtual pages between identified lines of text.

**Claim 30 (Original):** A method as recited in claim 26, wherein the paginating comprises determining a minimum integer number of virtual pages per page of the digital document while maintaining legibility, aspect ratio, and good margins.

**Claim 31 (Previously Presented):** A computer comprising one or more computer-readable storage media having computer-executable

instructions that, when executed by the computer, perform the method as recited in claim 26.

**Claim 32 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 26.

**Claim 33 (Currently Amended):** A method for facilitating enhanced readability of a fixed digital document, the method comprising:

    paginating multiple pages of the fixed digital document at a computing system implementing an intelligent virtual paging system, wherein the fixed digital document ~~which~~ cannot be modified using a character based application, into multiple virtual pages;

    determining, at the computing system, whether a virtual-page boundary is coextensive with a line of text for each virtual page of the multiple virtual pages;

    displaying each virtual page of the multiple virtual pages with overlap at a display device associated with the computing system, wherein the overlap of one virtual page includes content of the document repeated from another virtual page;

indicating such overlap during the displaying via the computing system, wherein the content of overlap is differentiated from other content.

**Claim 34 (Original):** A method as recited in claim 33, wherein the overlap is lowlighted.

**Claim 35 (Previously Presented):** A method as recited in claim 33, wherein unrepeated content of the multiple virtual pages starts at a common spatial position on the multiple virtual pages.

**Claim 36 (Original):** A method as recited in claim 33, wherein the overlap is softly lowlighted.

**Claim 37 (Original):** A method as recited in claim 33, wherein the overlap is shaded.

**Claim 38 (Original):** A method as recited in claim 33, wherein the overlap is “grayed.”

**Claim 39 (Original):** A method as recited in claim 33, wherein the paginating comprises determining a minimum integer number of virtual pages per page of the digital document while maintaining legibility, aspect ratio, and good margins.

**Claim 40 (Previously Presented):** A computer comprising one or more computer-readable storage media having computer-executable instructions that, when executed by the computer, perform the method as recited in claim 33.

**Claim 41 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 33.

**Claim 42 (Currently Amended):** A method for facilitating the enhanced readability of a digital document, the method comprising:

determining, at a computing system implementing an intelligent virtual paging system, an integer number of virtual pages per page of the digital document while maintaining legibility, aspect ratio, and good margins, wherein the digital document is a fixed digital document having multiple pages and cannot be modified using a character based application; ~~and~~

paginating, accordingly, the multiple pages of the digital document into multiple virtual pages at the computing system;

locating lines of text of the digital document at the computing system by employing a coarse optical character recognition (OCR) technique that identifies that a line of marks is text without identifying specific content; and

determining, at the computing system, whether a virtual-page boundary is coextensive with a line of text of a virtual page of the fixed digital document.

**Claim 43 (Original):** A method as recited in claim 42, wherein the determining determines the minimum integer number of virtual pages per page of the digital document.

**Claim 44 (Canceled)**

**Claim 45 (Original):** A method as recited in claim 42 further comprising displaying one or more of the virtual pages.

**Claim 46 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method as recited in claim 42.

**Claim 47 (Currently Amended):** A reading enhancement system, comprising:

one or more processors;

a document obtainer configured to obtain a digital document, wherein the digital document is a fixed digital document having multiple pages and cannot be modified using a character based application;

a virtual paginator configured to paginate the multiple pages of the digital document into multiple virtual pages, the multiple virtual pages having boundaries there between;

a virtual-page analyzer configured to:

identify and locate lines of text within the multiple pages of the digital document; and

analyze each respective virtual page to determine whether a respective virtual-page boundary is coextensive with a line of text of the respective virtual page; and

a display generator configured to generate and send the virtual pages of the multiple virtual pages to a display.

**Claim 48 (Previously Presented):** A system as recited in claim 47, wherein the analyzer is further configured to adjust the respective virtual-page boundary in response to determining that the boundary is



coextensive with the line of text of the respective virtual page so that the boundary is not coextensive with the line of text.

**Claim 49 (Original):** A system as recited in claim 47, wherein the analyzer is further configured to produce lowlighted overlap, wherein the overlap of one virtual page includes content of the document repeated from another virtual page.

**Claim 50 (Original):** A system as recited in claim 47, wherein the virtual paginator is further configured to determine a minimum integer number of virtual pages per page of the digital document while maintaining legibility, aspect ratio, and good margins.

**Claim 51 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method comprising:

    paginating multiple pages of a digital document into multiple virtual pages, wherein the digital document cannot be modified using a character based application, and wherein the digital document is a fixed digital document having multiple pages;

    determining whether a virtual-page boundary is coextensive with a line of text; and

    placing a virtual-page boundary so that such boundary is not coextensive with the line of text.

**Claim 52 (Previously Presented):** A computer-readable storage medium having computer-executable instructions that, when executed by a computer, performs the method comprising:

    paginating multiple pages of a digital document into multiple virtual pages;

    determining whether a virtual-page boundary is coextensive with a line of text of a virtual page of the digital document; and

    displaying one or more virtual pages of the multiple virtual pages and doing so with lowlighted overlap, wherein the overlap of one virtual

page includes content of the document repeated from another virtual page and the lowlighted overlap is positioned above unrepeated content that starts at a common spatial position of the multiple virtual pages.